Appl. No	:	09/818,123
Applicant	:	Frank Sauer
Filed	:	March 27, 2001
Title	:	Augmented Reality Guided Instrument Positioning With Depth Determining Graphics
Art Unit	:	2628
Examiner	:	Chante Harrison
Docket No.	:	2001P05535US01

Mail Stop: Appeal Brief – Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Sir:

By the filing of this Reply Brief in accordance with 37 CFR § 41.41, Appellants respectfully request reconsideration of the above-identified patent application by the Board of Patent Appeals and Interferences. This brief is in response to the Examiner's Answer which was mailed on December 27, 2007.

Satisfaction of 37 CFR §41.41(a)

This reply brief does not include any new or non-admitted amendment, affidavit or other evidence.

The Examiner did not provide any new grounds for rejection.

Reply Argument

Claims 31-40 stand rejected under 35 U.S. C. §103 (a) as being obvious in view of an article entitled "The Expert Surgical Assistant: An Intelligent Virtual Environment with Multimodal Input" (Billinghurst) in view of U.S. Patent No. 6,470,207 (Simon). Applicants maintain that the cited references fail to teach all of the limitations in the claims.

The Examiner states in her answer that Billinghurst teaches identifying landmarks using visual cues, such as highlighting the real object (i.e., target object/organ) which results in identification of the anatomical structure (p. 596, ll. 1-10, Fig. 2)(Examiner's Answer, sect. 10, page 7). Applicants submit that the Examiner is mischaracterizing the reference. The referenced image (Fig. 2) shows a trajectory for instrument movement based on a defined starting point. The instrument tip is marked on the images in Billinghurst with a cross which moves according to the user's instrument motion. The CT scan also changes in response to instrument depth, so the current images are those corresponding to the instrument tip location within the nasal cavity. Billinghurst uses this tracking mechanism to monitor the position of the instrument. Billinghurst does not use a virtual depth marker to determine the depth of the instrument tip within the patient. In fact, since Billinghurst uses a tracking mechanism to monitor the position of the instrument, Billinghurst has no need for a virtual depth marker. Furthermore, Billinghurst does not teach or disclose a virtual depth marker that remains external to the object. All of Billinghurst's techniques require tracking of the instrument so that the internal structures are known to the computer.

The Examiner maintains that Simon discloses an instrument embedded with infrared emitters or reflectors that remain external during insertion (Fig. 1). Applicants maintain that the infrared emitters or reflectors are different from the real feature recited in the claims because the infrared emitters are used with a tracking sensor (see col. 7, lines 45-61) to communicate to a computer the location of the instrument. The emitters allow the tracking sensor to calculate the 3D position of the instrument relative to the patient's body.

The Examiner also maintains that Simon teaches a "look ahead trajectory "505" to visualize where the instrument would be if it were advanced a predetermined distance in the patient (col. 9, ll. 50-65)(Examiner's Answer, sect. 10, page 8). Applicants maintain that this look ahead trajectory is projected into the image and is used to visualize where the instrument will go. Applicants' view

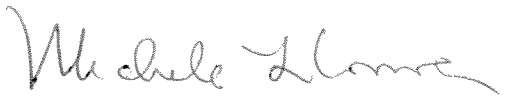
of the instrument is only that portion of the instrument that remains external to the patient. There is no internal view of the inserted part of the instrument. There is also no tracking of the instrument. Applicants use a straightforward approach to determine the depth of the inserted instrument tip by proxy of the external feature on the instrument in reference to the virtual depth marker. Applicants align the virtual depth marker with the real feature of the instrument in a way in which both the virtual depth marker and the real feature remain external to the patient. This provides a simple effective way for a physician to position an instrument within a patient to a desired depth without using tracking devices during the procedure. In Applicants' invention, the human user is the final judge of the alignment of the virtual depth marker with the real feature of the instrument. To the contrary, in both Billinghurst and Simon, tracking devices are transmitting information to a computer which determines the ultimate position and depth of the instrument. The Examiner is incorporating features and limitations into Applicants claims that simply do not exist and more importantly are contradictory to the recitations in the claim.

The combination of Billinghurst and Simon, as suggested here, is deficient and ineffective as the references, individually and in combination, fail to teach all of the claimed elements. Additionally, there is no teaching or suggestion in any of the references to modify them in such a manner that would result in the claimed invention.

Conclusion

Since the references do not teach, suggest or disclose all of the claimed elements, the rejection under §103 cannot stand and the claims therefore are distinguishable over the cited art. The applicants respectfully request that the Board reverses the examiner and direct that the application be passed to allowance.

Respectfully submitted,



Michele L. Conover
Reg. No. 34,962
Attorney for Applicant

Date: February 13, 2008
Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, New Jersey 08830
(732) 321-3013